The Ethics of Belief in Paranormal Phenomena[1]

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Abstract: The philosophical school of Evidentialism holds that people should form, amend, and relinquish a belief wholly in accordance with the available evidence for that belief. This paper reviews the extent to which believers in paranormal phenomena respect Evidentialism's so-called "ethics of belief." The analysis focuses on several common violations of evidentialist principles, namely, those pertaining to belief formation as a moral issue, belief inflexibility, belief inconsistency, confirmation bias, and disconfirmation effects. Despite some gaps and methodological shortcomings in the available data, the empirical literature documents an association between paranormal beliefs and a broad lack of sympathy with evidentialist ethics, although the effect sizes of these relations typically are small. The possible basis of this characteristic is briefly explored.

Keywords: paranormal belief, Evidentialism, belief inflexibility, belief inconsistency, confirmation bias, disconfirmation effects

Highlights

- Evidentialism holds that the formation of a belief must be based wholly on the evidence in its support.
- Common violations of evidentialist principles concern belief formation as a moral issue, belief inflexibility, belief inconsistency, confirmation bias, and disconfirmation effects.
- Paranormal believers in the general population are relatively prone to each of these violations.
- A need for a sense of meaning in or mastery over life events may play a major role in believers' relative subversion of evidentialist ideals.

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Belief is a moral act, for which the believer is to be held responsible.

British philosopher Herbert Arthur Hodges (1953, p. 65)

This paper explores aspects of the deliberation in which people may engage when forming and maintaining their beliefs in paranormal phenomena. Specifically, the analysis bears on a set of interrelated ethical and epistemological issues that collectively are dubbed by philosophers as "the ethics of belief" (Matheson & Vitz, 2014), that is, matters concerning the fundamental question of whether there are "norms of some sort governing our habits of belief-formation, belief-maintenance, and belief-relinquishment" (Chignell, 2018, p. 1).

Basic elements of the ethics of belief have been expounded by prominent philosophers across the ages, from ancient Greece to René Descartes and John Locke in the 17th Century and David Hume in the 18th Century, but among the general populace an appreciation of these issues was sparked principally by William Clifford in an article he wrote in 1877. Working in Victorian England, Clifford was a respected Cambridge mathematician and philosopher, and, most pertinently, a highly effective popularizer of science for general readers (Chisholm, 2002). In his essay "The Ethics of Belief" Clifford (1877) formulated his now-famous dictum on doxastic responsibility: "it is wrong always, everywhere, and for anyone, to believe anything upon insufficient evidence" (p. 295). The formation of a belief therefore carries with it a moral responsibility to ensure its evidential foundations.2 Indeed, Clifford went further by stressing the obligation to look diligently for relevant evidence, to remain open to new evidence that comes one's way, and to consider the testimony offered by others. Van Inwagen (1996, p. 145) refers to this elaboration as Clifford's "other principle" under which "it is wrong always, everywhere, and for anyone to ignore evidence that is relevant to his beliefs, or to dismiss relevant evidence in a facile way". In short, endorsement of a belief is morally justified if and only if one has earnestly sought, identified, and rationally analyzed confirmatory evidence with due reference to competing views. Clifford's thesis, with the primacy it gave to the role of evidence in conscientious belief formation and maintenance, became the cornerstone of the philosophy of Evidentialism (Aiken, 2015; Conee & Feldman, 2004), and his essay is now frequently anthologized.

The principle of evidentialism has nevertheless been subject to some criticism. Although Clifford's (1877) paper made no explicit reference to religious beliefs it was immediately portrayed by clerics and theologians as an unacceptably provocative attack on religious dogma (Small, 2004). Perhaps this response was not surprising, given that religious beliefs may often be a matter of pure faith or intuition. Even in more contemporary times DePoe (2016, p. 1) certainly had some grounds for his concern that in the context of religious epistemology, "anti-evidentialism seems to be all the rage these days." On the other hand, several researchers (e.g., Ahmad, 2020; Hendry, 2019; Van Leeuwen, 2014) have argued that when used in a religious context the word "belief" differs in many key respects from its meaning in other contexts and, indeed, strictly speaking religious tenets might not constitute beliefs at all. The merit of evidentialism therefore should be considered in a more general context.

After Clifford's premature death in 1879 the influential American psychologist William James (1897) argued that there are some special circumstances in which it is reasonable and even necessary to form a belief despite a lack of sufficient evidence; that is, if we do have a choice in what we believe, we may justifiably decide between options even when the choice cannot be made on evidential grounds (This assumption by James has been vigorously debated by philosophers, most recently under the rubrics of *doxastic voluntarism* and *doxastic involuntarism.* Implications of these assumptions for Clifford's thesis are reviewed by Lindner (2020) and Oya (2018). Further, one may choose to endorse a belief largely for pragmatic reasons (see also Marušić, 2011; Ohlsson, 2013); for example, some people's belief in God may be based on a hopeful assumption that this belief will exempt them from eternal damnation, thereby making this belief seem a prudent one for them to embrace (Jordan, 2006). Certainly, the possibility of non-evidential grounds for a belief may serve as a caution against an off-hand dismissal of a person as epistemically "blameworthy" for endorsing a belief in this manner; there may well be other pertinent considerations (see also Bortolotti et al., 2016; Bortolotti & Miyazono, 2016). Again, other commentators have quibbled over the sweeping universality of Clifford's principles of moralized rationality and how "evidence", "support", and "acceptance" may legitimately be defined and measured in this context (e.g., Bandyopadhyay et al., 2016**;** Dougherty, 2011; Levi, 2008; McCormick, 2014).

Notwithstanding these qualifications the general doctrine of evidentialism or morally responsible belief continues to be vigorously advocated by many philosophers (e.g., Cloos, 2015; Conee & Feldman, 2004; Way, 2016; Wood, 2008; Zamulinski, 2004). At the same time there are some people in the general population who show, as Cassam (2018, p. 1) observed, "a casual lack of concern about whether [their] beliefs have any basis in reality or are adequately supported by the best available evidence". Indeed, irrespective of the degree to which evidentialism is broadly endorsed (at least in principle) by the public (Garrett & Weeks, 2017; Ståhl et al., 2016), people's violation of the ethics of belief appears to be commonplace (Gilovich et al., 2002; Oechssler et al., 2009). In very general terms, therefore, it is reasonable to ask if there are grounds for suspecting that as a broad group, people who believe in paranormal phenomena may be relatively susceptible to such violations. In this context it is noteworthy that several studies (e.g., Dagnall et al., 2010; Irwin, 2003) have documented a relation between paranormal belief and deficiencies in reality testing. As the formation and maintenance of evidence-based beliefs would be critically reliant on effective reality testing these findings may be indicative of some violations of the ethics of belief among paranormal believers. The viability of this inference at least warrants more specific scrutiny in relation to the available empirical literature.

Some of the common violations of the ethics of belief will now be described with particular reference to belief in paranormal phenomena among the general population. The instances of violation addressed here concern belief formation as a moral issue, belief inflexibility, belief inconsistency, confirmation bias, and disconfirmation effects; each of these is discussed below in turn. Note that this list should not be regarded as a comprehensive taxonomy of violations of evidentialism: the list certainly is neither systematic nor exhaustive, and the instances nominated here are not mutually exclusive or otherwise distinct from one another. Rather, the focus here is on instances of these violations that have been delineated, operationalized, and subjected to empirical research by behavioral scientists. The set of "paranormal believers" is heterogeneous, so we cannot generalize. In some respects, heterogeneity is probably the case, but no studies of evidentialist violations have been undertaken to compare possible subtypes of paranormal believers. For the main part, therefore, in this paper paranormal believers are simply people in the general population who rank more highly on a standard dimensional measure of such beliefs. It is legitimate to make generalizations that apply on the whole to this group without implying that the observation must necessarily hold for every person in this group and for every subgroup.

Belief Formation as a Moral Issue

The core element of Clifford's (1877) dictum is that moral responsibility must be exercised in the formation and maintenance of beliefs. Although at first glance it may seem quaint and somewhat passé to describe the generation of beliefs in these terms, moral considerations (as broadly conceived) are now being recognized to have a far-reaching influence on people's mentation and behavior (e.g., Forsyth, 2019; Gray & Graham, 2018). This is specifically the case for the psychology of belief: the recent work of Ståhl and his colleagues (Ståhl et al., 2016; Ståhl & van Prooijen, 2018) has both operationalized and documented the general attitude that reliance on evidence and logic in the formation and evaluation of beliefs is a *moral virtue*. A disdain for these moral considerations would indeed constitute a fundamental violation of Cliffordian ethics of belief.

One way in which this violation could be instantiated is with respect to one's attitude to science. Given that science is the principal social institution that promulgates the necessity of an appeal to empirical data in the search for truth, people who do not view evidential grounds for a belief as a moral obligation may be relatively unenthusiastic about the values of science. Most of the general community claims to take an interest in science and to appreciate the contributions science has made to the quality of modern life (Castell et al., 2014), but there is also a substantial group of people who are disinterested in science, who distrust science, and who express concern about (actual or potential) negative effects of science and technology on society (Gauchat, 2012; Rutjens et al., 2018; Swanson, 2013). It is therefore germane to consider the general attitude to science among paranormal believers.

Investigation of a relation between paranormal beliefs and the extent of the person's scientific *education* has yielded mixed results; for a discussion see Manza et al. (2010) and Wang et al. (2011). Be this as it may, there are more direct indications that believers acknowledge the values of science less strongly than do skeptics. Clobert and Saroglou (2015) report that the intensity of paranormal beliefs is positively related to (a single-item index of) distrust of science (in two European countries $r = .12$ and $.23$, $p < .001$). Using more comprehensive indices, Irwin et al. (2015) found that paranormal belief correlates negatively with an acceptance of the values of science ($r = -.63$, $p < .001$), and this relation was replicated by Irwin et al. (2016; $rho = -.55$, $p < .001$). Similarly, Fasce and Picó (2019) report that paranormal beliefs relate negatively to trust in science ($r = -.34$, $p <$

2022, Vol. 2, No. 1, pp. 49–79

.001). These findings on paranormal believers' relatively weak endorsement of scientific values are consistent with the view that believers are not strong supporters of evidentialism. The data admittedly are not conclusive: although evidentialism is a central component of the values of science the latter do include additional ideals.

To date only two studies have documented the direct relation between the intensity of paranormal beliefs and evidentialism as a moral virtue. In one sample Ståhl and van Prooijen (2018) found a negative relation between paranormal belief and evidentialism perceived as a moral virtue both in oneself (r = -.14, p < .05) and others (r = -.19, p < .01), although these correlations failed to reach significance in another sample (r = -.10 and .04 respectively). Using different measures, Pennycook et al. (2020) also found a negative correlation between paranormal belief and the view that one's beliefs and opinions *ought* to change according to the evidence (r = -.22, p < .001). These findings are consistent with a negative relation between paranormal beliefs and the acceptance of evidentialism as a moral virtue.

Belief Inflexibility

In most situations a person has a choice in how he or she will behave, but some people in some contexts may not be very flexible in this regard. As Martin and Rubin (1995, p. 623) explain, *cognitive flexibility* entails the "person's (a) awareness that in any given situation there are options and alternatives available, (b) willingness to be flexible and adapt to the situation, and (c) self-efficacy in being flexible."

At the broadest of levels virtually any violation of the ethics of belief may be deemed to be indicative of a lack of cognitive flexibility. By neglecting substantiating evidence, one therefore may be relatively inflexible in the formation of a belief, in the maintenance of existing beliefs, and in relinquishing or revising an existing belief. The term *belief inflexibility* may be used to denote these collective effects. Much of the past research on belief inflexibility has been undertaken under the rubric of "dogmatism" or closed-mindedness, a personality style marked by an unyielding certainty in one's beliefs and by a lack of open-mindedness. Thus, extreme dogmatists are portrayed as showing "defensive cognitive closure" or an implacable resistance to changing their beliefs, even in the face of clearly discrediting information; a rigid unwillingness to suspend judgment; an impoverished ability to view an issue from another person's perspective; an intolerance of ambiguity and a high need for closure; a habit of asserting opinions as truths; an intolerance of contradiction; a general lack of awareness of the doctrinaire manner in which they endorse their beliefs; and an inclination to appeal to authority rather than evidence *per se* in order to justify their beliefs (e.g., Davies, 1993; Friedman & Jack, 2018; Johnson, 2009; Vacchiano et al., 1969).

2022, Vol. 2, No. 1, pp. 49–79

At the same time, it must be stressed that dogmatism or closed-mindedness is a trait-like construct and may be found in varying degrees across the whole population. There are now several questionnaire measures of dogmatic tendencies. A historically influential scale was constructed by Rokeach (1960) but is now deemed to have unacceptable psychometric shortcomings such as poor internal consistency, uncertain factorial structure, omission of negatively worded items, outdated wording, an intrinsic nonlinearity, a vulnerability to response sets, and a possible confound with political conservatism (Altmeyer, 1996; Johnson, 2009; Shearman & Levine, 2006). These problems appear to have inhibited research on the topic in the 1980s and 1990s, but the subsequent construction of alternative scales has fostered renewed interest in dogmatism and closed-mindedness.

A few studies have investigated the relation between dogmatism and belief in paranormal phenomena. Two studies report a higher mean level of dogmatism among paranormal believers than skeptics (Alcock & Otis, 1980; de Barbenza & de Vila, 1989), and one study reported a small positive correlation (r = .19, p < .05) between dogmatism and one measure of paranormal belief but not with another (r = .05; Thalbourne et al., 1995). In two other studies, however, these relations were not significant (Nanko, 1987; Tobacyk & Milford, 1983). Further, these investigations used either Rokeach's (1960) dogmatism questionnaire or a shortened version of it (Troldahl & Powell, 1965); as noted above, there are some psychometric concerns over this measure of dogmatism. Nevertheless, more recently Čavojová et al. (2019) reported a correlation of .13 (p < .05) between paranormal belief and a revised measure of dogmatism. Similarly, on a measure of open-minded thinking both Napola (2015; $F(3, 1659) = 55.36$, p < .001) and Rizeq et al. (2020; r = -.44, p < .05) found that paranormal believers performed more poorly than skeptics.

In addition to the research using questionnaire measures of dogmatism, a few experimental studies (Jones & Russell, 1980; Russell & Jones, 1980; Sparks & Pellechia, 1997) have indicated that paranormal be-

lievers may be relatively resistant to dissuasion from their beliefs, a behavior interpretable as dogmatic. Discussion of some of these studies is undertaken below in the context of disconfirmation effects.

In short, some research findings are consistent with the notion that paranormal believers are relatively prone to belief inflexibility, suggesting that believers as a group may lack sufficient respect for the evidentialists' stress on the primary importance of evidence for the formation and the revision of one's beliefs.

Belief Inconsistency

Another type of violation of the ethics of belief concerns belief inconsistency. A lack of due attention to evidential considerations may well lead to the formation and subsequent maintenance of beliefs that to some extent contradict one another. One may aver, for example, the necessity of honesty in close relationships and at the same time deem it appropriate to lie to a companion when an awkward situation arises. People are usually unaware of this tendency until it is pointed out to them (Nordby, 2003). Belief inconsistency is known colloquially as "doublethink," a term coined by the novelist George Orwell (1949) in his dystopian tale *Nineteen Eighty-Four.* More formally the construct is termed *schizodoxia* (Musacchio, 2012) or *incoherency of beliefs* (BonJour, 1985). Many commentators scorn the presence of belief inconsistency (e.g., Gawronski & Brannon, 2019; Lehrer, 1990) because it flies in the face of an expectation of people to be rational (Bortollotti, 2003). Kurzban (2010), on the other hand, argues that belief inconsistency is a normal and probably universal feature of the human condition. Similarly, Smith (2016, p. 16) asserts, "no one holds perfectly consistent beliefs. We are all quite adept at finding ways to make incompatible ideas sit contiguously."

Brief mention may be made here of a scenario under which the concurrent endorsement of inconsistent beliefs might not be utterly irrational. There is a case for the view that at least some beliefs may be endorsed probabilistically (Bazzoni, 2017; Leitgeb, 2017), that is, with a *degree* of confidence or commitment rather than simply as "true" or "false" (so-called binary belief). In addition to outright beliefs and disbeliefs, therefore, there may be an array of intermediate "not-quite-beliefs" (Tumulty, 2012) or *partial beliefs* to which one's commitment is equivocal to some extent. Further, the (approximate) degree of belief is held to be often accessible to introspection (Dogramaci, 2016). In this case advocates of evidentialism presumably would expect an assessment of evidential support for a proposition based on the balance of probabilities (Jeffrey, 1985/1992; Ramsey, 1926/1990). Nonetheless, under this probabilistic or Bayesian approach to belief representation, inconsistent beliefs could legitimately be held concurrently (Christensen, 2004), providing their subjective probabilities or degrees of confidence conform to a fundamental law of probability, namely that the sum of the probabilities of mutually exclusive events may not exceed 1 (Mlodinow, 2009). Within this constraint inconsistent beliefs may reasonably be embraced as strictly *alternative* views (Lukić et al., 2019), with each belief providing a feasible account of a given issue but with each being accorded only tentative endorsement. Be this as it may, the underlying notion of "partial belief" does raise additional conceptual complications (e.g., Eriksson & Hájek, 2007; Huber & Schmidt-Petri, 2009; Moon, 2017). For ease of exposition, we therefore continue to focus on binary belief, but the following comments on the consequences of inconsistent beliefs should apply also to any set of such beliefs for which the sum of subjective probabilities violates an axiom of probability theory by exceeding 1. Observance of this criterion may be hindered if the person's estimation of subjective probabilities is very imprecise (Elga, 2010; cf. Bradley & Steele, 2014; Schiffer, 2000). Interestingly, there is independent evidence that paranormal believers may have a relatively poor grasp of the laws of normative probability (e.g., Dagnall et al., 2016; Rogers et al., 2009).

As Geraskov (2012) has so deftly demonstrated, people's identification of beliefs as mutually contradictory can be conscious or unconscious. This observation should be borne in mind in the following context. Inconsistency between beliefs is held to evoke cognitive dissonance (Borgoni, 2014; Cooper, 2012; Festinger, 1957), a state of psychological discomfort and associated negative affect (Harmon-Jones, 2000) that will drive the person to resolve the inconsistency, whether by abandoning one of the contradictory beliefs altogether or otherwise qualifying or revising the beliefs (e.g., locating further evidence that helps to resolve the discrepancy between them, or identifying different circumstances under which the respective beliefs are appropriate; Cooper, 2012). These processes help to eliminate inconsistency between beliefs, and they do so in harmony with the ethics of belief. In some instances, however, it seems that a person may seek to reduce the level of cognitive dissonance by means that are not so heedful of the ethics of belief (Smith, 2016). For example, perhaps the person may self-deceptively downplay the importance or subjective probability of the conflicting beliefs (Boudry & Braeckman, 2011); or mentally encode the conflicting beliefs differently, thereby impeding their

2022, Vol. 2, No. 1, pp. 49–79

direct comparison (Geschke et al., 2010; Kurzban, 2010; Sloman, 2002); or temporarily exclude one of the conflicting beliefs from active consideration (Boudry & Braeckman, 2011; Hansson, 2017); or even mount mental barriers between the beliefs (a hypothetical cognitive process variously termed compartmentalizing, encapsulating, or partitioning; Davies & Egan, 2013). Each of these cognitive processing stratagems seemingly has the objective of circumventing potential tension between conflicting propositions and thereby enhancing the systemic coherence of belief networks (Grim et al., 2017). In such cases, however, the inconsistent beliefs may co-exist relatively unchanged for some time.

In summary, violations of the ethics of belief may occur both in the initial formation of inconsistent beliefs and in the use of an avoidant strategy to bypass a consequent state of cognitive dissonance. The extent to which inconsistent beliefs persist therefore may be another indication of the occurrence of ethical violations. For this reason, it is important to have a measure of people's inclination to harbor contradictory beliefs. An impediment to research into this psychological characteristic has been the lack of a standardized measure of susceptibility to belief inconsistency, but a formative step toward this goal was taken by Rittik (2013). Rittik's questionnaire comprises 16 propositions and respondents are asked to indicate the strength of their agreement with each item on a Likert-type scale (1 = strongly agree to 4 = strongly disagree). The 16 statements comprise 8 pairs of inconsistent beliefs, so an ideally logical respondent would be expected to give complementary ratings to the members of each pair (e.g., one high and one low). The (absolute) extent of the shortfall in complementarity is summed over the 8 pairs as an index of the susceptibility to belief inconsistency. As Rittik predicted, this index correlated positively with dogmatism ($r = .53$, $p < .001$). This finding accords well with Rokeach's (1954) speculations on the level of belief inconsistency among dogmatists and, more importantly, it supports the validity of Rittik's approach to the measurement of susceptibility to belief inconsistency.

Seeking to build on Rittik's (2013) research by applying it to the study of belief in paranormal phenomena, Irwin et al. (2015) investigated the relation between paranormal belief and Rittik's index of belief inconsistency. Their study found the correlation to be significant for one sample (*rho* = .35, $p < .001$) but null for another (*rho* = .00). However, Cronbach's α for Rittik's scale was only .47 and .55 in the two samples used in the study; that is, the internal consistency of the item pairs was not strong. Further investigation of a relation between belief inconsistency and the intensity of paranormal beliefs therefore warrants the construction of a measure of belief inconsistency that redresses the psychometric limitations of Rittik's (2013) questionnaire.

Such measures are currently in preparation. Petrović and Zezelj's (2021) forthcoming Doublethink Scale is a substantial improvement on Rittik's (2013) measure. Most interestingly, this scale showed a correlation of .18 ($p < .05$) with superstitiousness and .29 ($p < .05$) with the use of such practices as homeopathy and acupuncture (Marija Petrović, personal communication, August 23, 2021). Certainly, there is still a need for studies with both an improved measure of doublethink and a more comprehensive index of paranormal belief. Nonetheless, in conjunction with the findings of Irwin et al. (2015), Petrović's data provide a degree of support for the view that paranormal believers are relatively prone to endorse inconsistent beliefs, contrary to the principles of evidentialism.

Confirmation Bias

A violation of the ethics of belief may arise also with respect to the selection of evidence in support of a belief. Under a so-called *confirmation bias* people search for, interpret, or recall evidence in ways that are biased toward confirming their existing beliefs; that is, people "test" their beliefs in a cherry-picking fashion by soliciting, recalling, and assimilating mainly confirmatory information and by focusing on one possible interpretation of the evidence while ignoring alternatives (Jelalian & Miller, 1984; Nickerson, 1998). Although a confirmation bias occasionally may be defensible (e.g., in the context of a belief about impending danger, Dudley & Over, 2003; or when there are hardly any alternative beliefs, Perfors & Navarro, 2009), in most situations this strategy of selective attention appears to be a defensively-driven impediment to the on-going critical evaluation of existing beliefs (Klayman, 1995; Sleegers et al., 2019). Confirmation bias has been described as ubiquitous (Nickerson, 1998) and "the most insidious of all cognitive errors" (Hollier, 2016, p. 1), and it is usually construed as an unconscious heuristic that is inaccessible to introspection (Nickerson, 1998), although Anglin (2016) has shown that some people are aware of this bias in themselves.

A tendency toward confirmation bias in paranormal believers has been documented through various research paradigms. In an online survey, Irwin et al. (2012) administered Rassin's (2008) questionnaire measure

2022, Vol. 2, No. 1, pp. 49–79

of confirmation bias and found it to have a small but positive correlation (*rho* = .22, $p < .01$) with paranormal belief. On the other hand, Rassin's scale has scant independent psychometric documentation, and many of its constituent items appear to have more to do with impulsivity and intuition than with confirmation bias.

In experimental studies paranormal believers given information through ostensibly psychic readings (Boyce & Geller, 2002; Lawson, 2003; Roe, 1995) or horoscopes (Glicket al., 1989; Munro & Munro, 2000; Wiseman & Smith, 2002) tended to endorse much of the information despite having been spuriously generated with no specific reference to the psychological profile of the participant. These studies document a key aspect of confirmation bias in the context of paranormal belief, namely that when evidence bearing on a paranormal belief is encountered, paranormal believers are relatively inclined to act in accordance with that established belief rather than considering other (non-paranormal) possibilities. Again, there remains a question as to whether this violation of belief ethics is relatively specific to the context of paranormal belief (Braithwaite, 2006) or, alternatively, if paranormal believers are generally susceptible to confirmation bias in forming and maintaining *any* type of belief. Consistent with the latter possibility, an experimental study by Blanco et al. (2015) found that, in comparison to paranormal skeptics, a sample of believers had a slight bias toward the interpretation of ambiguous information as supportive of an existing belief even when the context was unrelated to paranormal phenomena (viz., the effectiveness of a new medication). Nonetheless, this finding warrants replication with a wider range of non-paranormal beliefs in order to test its generality.

Of particular interest here is the possibility that paranormal skeptics also are subject to confirmation bias. Hergovich et al. (2010) found that psychologists who were skeptical of astrological claims tended to commend more highly the methodological rigor of a fictitious experimental report that described the disconfirmation of astrological hypotheses. Butzer (2020) found the same effect in academic psychologists' evaluation of a test of parapsychological hypotheses. These observations raise a potentially important methodological point. Disbelief in the paranormal is a belief and, indeed, often an ardent one (Irwin et al., 2017; Lamont et al., 2009). If violations of the ethics of belief serve in some sense to "protect" cherished beliefs (Boudry & Braeckman, 2011; Davies & Egan, 2013; Hart et al., 2009) one might expect that paranormal believers and skeptics alike would show these violations when their respective beliefs are contextually activated. As a corollary of this view, if violations of belief ethics are indeed to be found at both extremes of the paranormal belief–disbelief continuum, the application of linear statistical analyses (correlation or linear regression) may not be the most sensitive strategy for the assessment of a relation between such violations and the intensity of paranormal beliefs. Some of these strategies for accommodating contradictory beliefs have been formulated by psychoanalysts and by logicians and other artificial-intelligence scientists who design "rational agents" for smart machines. The operation and the effectiveness of such strategies in humans may warrant stronger empirical documentation.

In summary, available data on confirmation effects in paranormal believers therefore are consistent with these people's inclination to violate Cliffordian ethics of belief, although some data also indicate the need to consider possible curvilinear relations across the continuum of belief and disbelief.

Disconfirmation Effects

Violations of the ethics of belief may occur also in how which people deal with evidence that disconfirms their beliefs. Under Clifford's (1877) analysis the search for disconfirmatory evidence is held to have crucial ethical implications: such evidence should first be energetically pursued and then, if the contrary evidence is substantiated, it should become the grounds for either abandonment or judicious revision of the associated belief. Sometimes, of course, this whole process is far from a trivial epistemological exercise (Lavigne et al., 2015). As Anomaly (2017, p. 287) observes, "Since we have goals other than increasing our understanding of the world, we constantly face hard choices about the kind and quantity of information to gather, how long we should spend sifting through it, and the practical use to which we might put it." Perhaps it is not surprising, therefore, that people may often be disinclined to process disconfirmatory evidence in a wholly rigorous manner, notwithstanding the admonitions of the advocates of Evidentialism.

The psychological consequences of the disconfirmation of beliefs or expectations have long interested social scientists. Some of the basic findings of this body of research are that when people are motivated by a self-serving defensiveness rather than a need for accuracy (Hart et al., 2009) they appear to be unable to assess evidence independently of their prior beliefs and preferences (Bastardi et al., 2011; Lord et al., 1979), and they scrutinize incompatible evidence longer, examine it more diffusely in the search for a possible refutation, dero-

2022, Vol. 2, No. 1, pp. 49–79

gate its source, and generally judge it to be weaker than evidence compatible with their existing beliefs (Bastardi et al., 2011; Ditto & Lopez, 1992; Edwards & Smith, 1996). At the other extreme, people may be motivated to avoid exposure to potentially disconfirmatory evidence (Shepherd & Kay, 2012). These defensive biases seem to be relatively independent of cognitive sophistication or ability (Stanovich et al., 2013; West et al., 2012) and indeed, they may be relatively primitive cognitive mechanisms; it is in this sense that Boudry (2018, p. 21) suggests that "beliefs have evolved to become resilient and immune to refutation, which does not (necessarily) involve deliberate deceit or hypocrisy on the part of believers." In any event these biases against disconfirmation would allow the on-going maintenance of tenuous beliefs, shielding them from revision or relinquishment.

In the specific context of the disconfirmation of paranormal or related beliefs, one of the seminal studies in this field is Festinger et al.'s (1956) case study, *When Prophecy Fails,* which documented the disconfirmation of a paranormal belief system. In 1954 a small doomsday sect was established in the USA. The group believed the American West Coast would be inundated by a huge flood on December 21, 1955, but sect members would be rescued by "superior beings" who would arrive in a flying saucer. In due course many members of the group abandoned their employment or education and gave away their possessions in expectation of their imminent departure in the flying saucer. Festinger and his colleagues infiltrated the group to observe the effects on the cult members when the apocalyptic prophecy inevitably failed. After some initial bewilderment the group decided that the predicted flood did not occur because God had witnessed the group's righteousness and therefore had decided to spare the residents of the West Coast from annihilation. Rather than abandoning their cult beliefs and disbanding after the failure of the prophecy, members of the group therefore became even more enthusiastic for their movement's teachings and renewed their fervent efforts to proselytize or communicate their "sacred knowledge" to others. According to Festinger et al. (1956), key factors in maintaining a belief in the face of disconfirmation were the great strength of the initial belief, the availability of a means to rationalize (or discredit) the disconfirmation, and the social support of other people who had shared the disconfirmatory experience. Some subsequent "failure of prophecy" case studies confirmed the reinforcement of cult beliefs following disconfirmation (*Dawson, 1999), although such reaffirmation is not invariable (*Balch et al., 1983*)*. Nonetheless these studies suggest a biased handling of disconfirmatory evidence by paranormal believers that allows their beliefs to persist (Jelalian & Miller, 1984).

2022, Vol. 2, No. 1, pp. 49–79

Methodologically superior laboratory investigations of disconfirmation effects with paranormal beliefs have compared performances of believers and skeptics on a task that entailed a refutation of their beliefs. Russell and Jones (1980) presented to paranormal believers and skeptics the abstract of a journal article that purportedly disproved the existence of ESP. Believers subsequently could recall less information from the abstract than did skeptics, and some believers distorted their account of the abstract's contents to accord with their beliefs. In a follow-up study, Jones and Russell (1980) presented participants with a demonstration of an ESP card-guessing test that was either highly successful or unsuccessful (at chance). Broadly speaking, both believers and skeptics concluded that ESP had occurred in the successful demonstration, but only the skeptics believed that ESP had not occurred in the unsuccessful demonstration. The researchers concluded that the believers, but not the skeptics, showed a disconfirmation effect; that is, believers discounted evidence that did not confirm their belief about ESP (Batson (1975) reports similar effects in the cognate context of religious beliefs).

The research literature therefore suggests that paranormal believers are relatively susceptible to a *disconfirmation bias* (Edwards & Smith, 1996), that is, they are inclined to bias their interpretation of disconfirmatory evidence to accord with their beliefs. There remains a possibility, however, that this strategy is not specific to evidence about the existence of the paranormal. That is, do paranormal believers have a more general bias against disconfirmation of any of their beliefs, even when the beliefs are inconsequential and largely devoid of personal significance?

Contemporary research on the consequences of belief disconfirmation gives primary emphasis to the psychological construct of bias against disconfirmatory evidence (BADE). This cognitive bias is reported to have two basic components (Speechley et al., 2012): the degree to which disambiguating evidence influences a belief through its integration with the belief, and positive response bias or a willingness to accord a conclusion with high certainty when justified by the evidence. The measurement of these two components has been progressively refined through the development of the BADE test (e.g., Woodward et al., 2006) and there is now an extensive body of literature in which the BADE test has been used to index the susceptibility to disconfirmatory bias (e.g., see Eisenacher & Zink, 2017; Ward & Garety, 2019).

The hypothesis of paranormal believers' poor performance on the BADE test has been addressed by only one study. Prike et al. (2018) observed significant negative correlations between paranormal belief and the BADE components, namely, a readiness to integrate disconfirmatory evidence with the content of an existing belief (r = .19 to -.25, p < .01) and a readiness to adjust the strength of a belief in light of the available evidence (r = -.35 to -.40, p < .001). Across a variety of methodological procedures there is therefore consistent evidence of disconfirmatory bias in paranormal believers, a reluctance to revise beliefs in the face of disconfirmatory information, contrary to the ideals of evidentialism.

Discussion

When considered collectively, there is sufficient evidence here to suggest that paranormal belief is correlated with a susceptibility to various violations of Cliffordian ethics of belief. Admittedly there are occasional lacunae and shortcomings in the database, and the documented relations attest to relatively small effect sizes. Even if confirmed by further research, violations of evidentialist principles of course may be just one contributory factor in the formation and maintenance of paranormal beliefs. Further, undoubtedly there are a few people who deliberate very carefully before endorsing a belief in paranormal phenomena (Irwin, 2017, pp. 177–178), so any association between belief and evidential violations would not be expected to be universal; as with any theoretical model there will be individual cases and subgroups of cases for which the model is a poor fit. At the same time, the small effect sizes cited here may be accumulative and interact with those of other factors related to the formation of paranormal beliefs, so the theoretical significance of evidential violations should not be underestimated.

Interpretation of the available empirical findings also prompts a caution with respect to investigators' reliance on *linear* statistical analyses. As noted in our survey of confirmation bias Hergovich et al. (2010) and Butzer (2020) demonstrated the operation of this bias among paranormal skeptics. Findings for the various types of violation of Cliffordian ethics may therefore need to be reanalyzed for the phenomena at *both* extremes of the belief continuum; curvilinear analyses may yet identify violations among skeptical participants. The factor of dogmatism could well be a case in point; it would be inappropriate (and certainly counterintuitive) to interpret the empirical findings to imply that skeptics have *no* dogmatic tendencies whereas paranormal believers do. Dogmatism is commonly associated with extremist beliefs regardless of their direction (Johnson, 2009). In short, past linear statistical analyses at best indicate that believers are more *strongly* prone to evidential neglect than are skeptics. Future studies of reasoning styles across the belief–disbelief continuum would do well to include curvilinear analyses of these relations.

Given a tendency of paranormal believers as a group to be relatively less inclined to form, maintain, and relinquish beliefs on the basis of relevant evidence, the question arises as to why this is the case. Evidentialism is of course an idealistic position; philosophers and cognitive scientists would prefer people to generate their beliefs in a fundamentally rational manner and thereby to seek "truth" that is maximally consonant with reality. But human beings are not uniformly capable of such untainted rationality (Miyazono & Bortolotti, 2021). Rather, they are subject to all manner of motivational biases in everyday life, and their thought processes are vulnerable to common if unwitting logical flaws (Gilovich et al., 2002), many of which could serve to subvert the ideals of evidentialism to a secondary consideration. Since the pioneering work of Taylor (Taylor, 1983; Taylor & Brown, 1988) beliefs have been understood not only as a person's attempt to represent "truth" but also as a means to serve significant psychological needs of the person. The need most widely promoted to instigate paranormal beliefs is the need for a sense of meaning in or mastery over life events (e.g., FioRito et al., 2021), particularly events in the interpersonal domain; for a review of this literature see Irwin (2009, pp.118–121). Coupled with paranormal believers' proneness to dissociate and fantasize (Irwin, 1990, 1994; Makasovski & Irwin, 1999) this need may well partly override an evidential imperative in the formation of beliefs.

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